IN THE CLAIMS

1. (amended) An objective employed for use in inspecting a specimen, said objective employed with light energy having a wavelength in a range of approximately ~~266~~ 190 to 1000 nanometers, comprising:

a focusing lens group comprising at least one focusing lens configured to receive said light energy and form focused light energy;

a field lens oriented to receive focused light energy from said focusing lens group and provide intermediate light energy;

a Mangin mirror arrangement positioned to receive the intermediate light energy from the field lens and form controlled light energy; and

an immersion liquid between the Mangin mirror arrangement and the specimen.

2. (original) The objective of claim 1, wherein said objective provides a relative bandwidth in excess of 0.5 in the presence of said light energy.

3. (original) The objective of claim 1, said Mangin mirror arrangement comprising:

a first lens/mirror element having substantially curved concave surfaces and a second surface reflection; and

a second lens/mirror element having minimally curved surfaces and a second surface reflection.

4. (original) The objective of claim 3, wherein said Mangin mirror arrangement further comprises a third lens element having one surface in contact with the immersion liquid.

5. (original) The objective of claim 1, configured to have a numerical aperture in excess of approximately 0.9.

6. (original) The objective of claim 1, configured to have a numerical aperture in excess of approximately 1.1.

7. (original) The objective of claim 4, configured to have a numerical aperture in excess of approximately 1.2.

8. (original) The objective of claim 1, wherein each lens in the focusing lens group and the field lens each has a diameter of less than approximately 25 millimeters.

9. (original) The objective of claim 1, wherein all lenses are constructed of a single glass material.

10. (original) The objective of claim 1, wherein said objective, including the field lens, the focusing lens group, and the Mangin mirror arrangement comprise no more than nine elements.

11. (original) The objective of claim 1, wherein the single glass material is fused silica.

12. (original) The objective of claim 1, wherein the single glass material is calcium fluoride.

13. (original) The objective of claim 2, said objective providing corrected bandwidth less than approximately 0.9 with a center wavelength of 633 nm.

14. (original) The objective of claim 2, wherein corrected bandwidth is less than approximately 0.07 with a center wavelength of 196nm.

15. (original) The objective of claim 1, wherein said objective is formed from a plurality of glass materials.

16. (original) The objective of claim 15, wherein the plurality of glass materials comprise fused silica and calcium fluoride.

17. (original) The objective of claim 1, wherein said objective is employed with a microscope having a flange, wherein the flange may be located approximately 45 millimeters from the specimen.

18. (original) The objective of claim 1, wherein said objective is employed with a microscope having a flange, wherein the flange may be located approximately 100 millimeters from the specimen.

19. (original) The objective of claim 1, wherein said focusing lens and field lens forms an intermediate image between said field lens and said Mangin mirror arrangement.

20. (original) An objective employed for use in inspecting a specimen, comprising:

a focusing lens group configured to receive light energy and comprising at least one focusing lens;

at least one field lens oriented to receive focused light energy from said focusing lens group and provide intermediate light energy;

a Mangin mirror arrangement positioned to receive the intermediate light energy from the field lens and form controlled light energy; and

an immersion substance located between said Mangin mirror arrangement and said specimen;

said Mangin mirror arrangement imparting the controlled light energy to the specimen with a numerical aperture in excess of 0.9 and a field size of greater than or equal to approximately 0.15 mm.

21. (original) The objective of claim 20, wherein said objective provides a relative bandwidth in excess of 0.5 in the presence of said light energy, said light energy having a wavelength in the range of approximately 157 nanometers through the infrared light range.

22. (original) The objective of claim 20, said Mangin mirror arrangement comprising:

a first lens/mirror element having substantially curved concave surfaces and a second surface reflection; and

a second lens/mirror element having minimally curved surfaces and a second surface reflection.

23. (original) The objective of claim 20, said Mangin mirror arrangement comprising:

a first lens/mirror element having substantially curved concave surfaces and a second surface reflection; and

a second lens/mirror element having minimally curved surfaces and a second surface reflection; and

a third lens element having one surface in contact with the immersion substance.

24. (original) The objective of claim 20, wherein each lens in the objective has a diameter of less than approximately 25 millimeters.

25. (original) The objective of claim 20, wherein all lenses are constructed of a single glass material.

26. (original) The objective of claim 20, wherein said objective has at most seven elements.

27. (original) The objective of claim 20 where the numerical aperture is greater than approximately 0.9.

28. (original) The objective of claim 20, where the numerical aperture is greater than approximately 1.1.

29. (original) The objective of claim 20, where the numerical aperture is greater than approximately 1.2.

30. (original) The objective of claim 20, wherein said objective comprises less than nine elements.

31. (original) The objective of claim 20 wherein said objective comprises less than 11 elements.

32. (original) The objective of claim 20 wherein the objective comprises less than 7 elements.

33. (original) The objective of claim 20, wherein all lenses in the objective are constructed of a single glass material.

34. (original) The objective of claim 33, wherein the single glass material is fused silica.

35. (original) The objective of claim 33, wherein the single glass material is calcium fluoride.

36. (original) The objective of claim 20, wherein corrected bandwidth for the objective is less than approximately 0.9 with a center wavelength of approximately 633 nm.

37. (original) The objective of claim 20, wherein corrected bandwidth is less than approximately 0.07 with a center wavelength of approximately 196 nm.

38. (original) The objective of claim 20, wherein said objective may be located in a flange within a microscope, said flange positioned no more than approximately 45 millimeters from the specimen during normal operation.

39. (original) The objective of claim 20, wherein said objective may be located in a flange within a microscope, said flange positioned no more than approximately 100 millimeters from the specimen during normal operation.

40. (original) The objective of claim 20, wherein the immersion substance is primarily water.

41. (original) The objective of claim 20, wherein the immersion substance is primarily oil.

42. (original) The objective of claim 20, wherein the immersion substance is primarily silicone gel.

43. (original) The objective of claim 20, wherein the objective is optimized to produce relatively minimal spherical aberration, axial color, and chromatic variation of aberrations.

44. (original) The objective of claim 20, said objective having a numerical aperture of greater than approximately 1.0 at the specimen.

45. (original) The objective of claim 20, wherein each lens in the objective has a diameter of less than approximately 35 millimeters.

46. (original) The objective of claim 20, said objective having an ability to be employed with a microscope having a flange, wherein the flange may be located less than no more than approximately 45 millimeters from the specimen during normal operation.

47. (original) The objective of claim 20, said objective employing no more than two glass materials.

48. (original) The objective of claim 47, wherein the no more than two glass materials comprise fused silica and calcium fluoride.

49. (original) The objective of claim 20, wherein the immersion substance comprises one from a group comprising water, oil, and silicone gel.

50. (original) The objective of claim 49, configured to have a numerical aperture of approximately 1.2.

51-62. (canceled)

63. (original) The objective of claim 7, where the immersion substance is pure water.

64. (original) The objective of claim 1, where the immersion substance has a refractive index greater than pure water.

65. (original) The objective of claim 29, where the immersion substance is pure water.

66. (original) The objective of claim 20, where the immersion substance has a refractive index greater than pure water.

67. (new) An objective, comprising:

a focusing lens group comprising at least one focusing lens configured to receive light energy and form focused light energy;

a field lens oriented to receive focused light energy from said focusing lens group and provide intermediate light energy;

a Mangin mirror arrangement positioned to receive the intermediate light energy from the field lens and form controlled light energy; and

an immersion liquid between the Mangin mirror arrangement and a specimen.

68. (new) The objective of claim 67, wherein said objective provides a relative bandwidth in excess of 0.5 in the presence of said light energy.

69. (new) The objective of claim 67, said Mangin mirror arrangement comprising:

a first lens/mirror element having substantially curved concave surfaces and a second surface reflection; and

a second lens/mirror element having minimally curved surfaces and a second surface reflection.

70. (new) The objective of claim 69, wherein said Mangin mirror arrangement further comprises a third lens element having one surface in contact with the immersion liquid.

71. (new) The objective of claim 67, configured to have a numerical aperture in excess of approximately 0.9.

72. (new) The objective of claim 67, configured to have a numerical aperture in excess of approximately 1.1.

73. (new) The objective of claim 67, wherein each lens in the focusing lens group and the field lens each has a diameter of less than approximately 25 millimeters.

74. (new) The objective of claim 67, wherein all lenses are constructed of a single glass material.